

**PAYSON MODERATE AREA PM₁₀ MAINTENANCE
PLAN AND REQUEST FOR REDESIGNATION TO
ATTAINMENT**



**Air Quality Division
Arizona Department of Environmental Quality**

March 2002

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PAYSON MODERATE AREA PM₁₀ PLAN AND REQUEST FOR REDESIGNATION TO ATTAINMENT

I. EXECUTIVE SUMMARY

The Clean Air Act (CAA) states that an area can be redesignated to attainment if specific conditions are met, such as attainment of federal air quality standards; approval of a state implementation plan and a maintenance plan; and permanent and enforceable improvements in air quality. This document demonstrates that all CAA requirements for attainment have been met, summarizes the progress of the area in attaining the PM₁₀ standards, demonstrates that the Payson area qualifies for EPA's Clean Data Policy and Limited Maintenance Plan (LMP) option, and includes a maintenance plan to assure continued attainment for ten years after the redesignation.¹ This document is a formal request to the U.S. Environmental Protection Agency (EPA) to redesignate the Payson, Arizona PM₁₀ nonattainment area to attainment of the health-based 24-hour average and annual average PM₁₀ National Ambient Air Quality Standards (NAAQS).

Analyses included in this document show that ambient air quality measurements have remained below the NAAQS for PM₁₀, and both the 24-hour average design value and annual average PM₁₀ design value are below EPA's LMP allowable limits.² This document also demonstrates that the emission reduction control measures responsible for the air quality improvement are both permanent and enforceable. The primary control measures to achieve attainment include implementing reasonably available control measures (RACM) to reduce fugitive dust emissions and to reduce residential wood combustion emissions.

Air quality monitors, located in the Payson, Arizona PM₁₀ nonattainment area, recorded exceedances of the 24-hour PM₁₀ NAAQS on eleven days in 1989 and 1990 (Table III-1). On December 21, 1993 (58 FR 67334), EPA designated the central portion of Gila County that includes the community of Payson as a moderate PM₁₀ nonattainment area, effective January 20, 1994. As a result of this action, the State was required to

¹PM₁₀ is particulate matter that is 10 micrometers or less in diameter.

²The method for calculating design values for PM₁₀ is detailed in *PM₁₀ SIP Development Guideline*, EPA-450/2-86-001, June 1987.

submit to EPA a PM₁₀ State Implementation Plan (SIP) which included an attainment demonstration for the area.

In June 1995, the Arizona Department of Environmental Quality (ADEQ) submitted to EPA the PM₁₀ SIP for the Payson PM₁₀ nonattainment area. The SIP contained air quality modeling for the design year 1990 and projected attainment in the year 2001 based on emission reductions from certain PM₁₀ sources (such as unpaved roads and parking lots). The 1990 base year emissions inventory comprised mainly of PM₁₀ emissions from paved and unpaved roads, wood smoke, and industrial sources. The attainment demonstration was based upon the impact of implemented RACM that reduced PM₁₀ emissions generated from the identified source categories, the closure of two industrial sources, and more stringent EPA standards for woodstoves. The demonstration also took into account the increases or decreases in PM₁₀ that would result from changing land use patterns and the growth in population and vehicle traffic between 1990 and 2001 in the Payson area.

Attainment of the 24-hour standard is determined when the expected number of days per year with PM₁₀ concentrations above 150 Fg/m³ (average over a three year period) is less than or equal to one. Attainment of the annual PM₁₀ standard is achieved when the expected annual arithmetic mean PM₁₀ concentration over a three year period is equal to or less than 50 Fg/m³.

PM₁₀ concentrations reported at the Payson monitoring site between 1998 and 2000, showed no measured exceedance of the 24-hour PM₁₀ NAAQS. Thus, the three-year average was less than one exceedance per year, which indicates the Payson area attained the 24-hour PM₁₀ NAAQS. Review of the annual standard for calendar years 1998, 1999 and 2000 reveals that the 3-year annual average was 27 Fg/m³, thus the Payson area also attained the annual PM₁₀ NAAQS. As a result, on February 15, 2002, EPA determined that the Payson PM₁₀ nonattainment area did attain the 24-hour and annual PM₁₀ NAAQS by December 31, 2000 (67 FR 7082).

EPA's LMP option applies to certain moderate PM₁₀ nonattainment areas seeking redesignation to attainment. If the area meets certain criteria, the State may submit a maintenance plan at the time it is requesting redesignation that is more streamlined than would ordinarily be permitted. To qualify for the LMP option an area should be attaining the NAAQS and the average PM₁₀ design value for the area, based upon the most recent 5 years of air quality data at all monitors in the area, should be at or below 98

Fg/m³ for the 24-hour and 40 Fg/m³ for the annual PM₁₀ NAAQS with no violations at any monitor.

Based on the most recent 5 years of air quality data, 1996-2000, the 24-hour average design value for the Payson area is 88 Fg/m³ and the annual average PM₁₀ design value is 26 Fg/m³. Both the annual average and the 24-hour average PM₁₀ design values are within EPA's LMP allowable limits.

With this submittal, ADEQ requests that EPA approve this limited maintenance plan for the Payson PM₁₀ nonattainment area and redesignate the area to attainment for the 24-hour and annual PM₁₀ NAAQS.

II. INTRODUCTION

A. Description of Payson PM₁₀ Nonattainment Area

1. Location

Payson is located in the north central part of Gila County, 93 miles north of the Phoenix area (Figure II-1). Payson is a recreational and retirement area. It is a gateway to the Mogollon Rim with lakes, streams, and forests. At 5,000 feet in elevation, the area has a moderate climate, classified as semiarid mesothermal.³ As a result, visitors and retirees are attracted to this area. Payson was incorporated in 1973.

The Payson nonattainment area contains four complete townships and is 144 square miles in size (40 CFR 81.303). Payson is geographically located in about the center. The Payson nonattainment area is defined by the following townships (see Figure II-1):

T10N, R9E, sections 1-3, 10-15, 22-27, and 34-36

T11N, R9E, sections 1-3, 10-15, 22-27, and 34-36

T10-11N, R10E

T10N, R11E, sections 4-9, 16-21, and 28-33

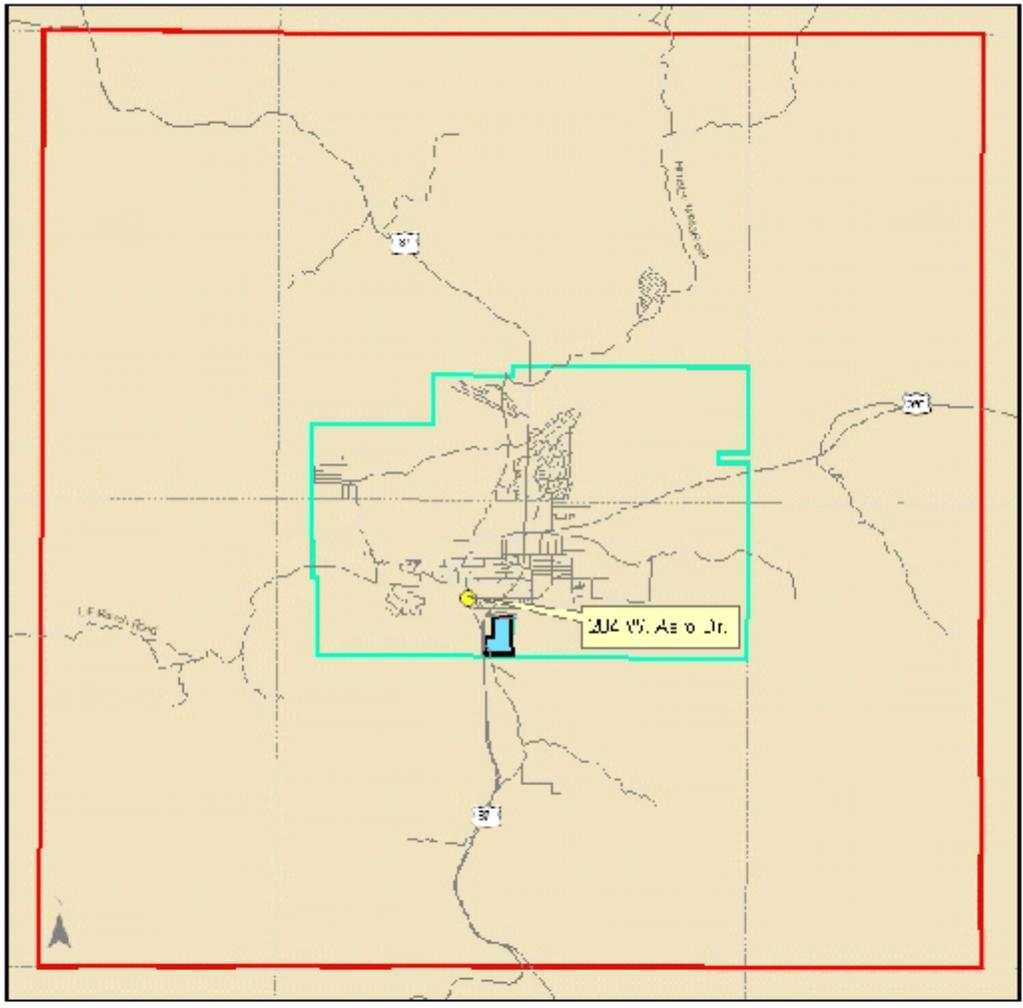
T11N, R11E, sections 4-9, 16-21, and 28-33

2. Population

In the 1970s, during which rural counties in the U.S. outpaced urban counties in population growth, the population of Payson, located in northern Gila County, increased nearly three-fold. The population boom in Payson resulted in a growth rate of more than 180 percent between 1970 and 1980. At the same time, Gila County grew at a moderate rate of 26.7 percent. Payson continued to gain population during the 1980s and 1990s at a rate exceeding 60 percent. In contrast, Gila County's growth rate was 8.5 percent during the 1980s and increasing to 27.7 percent during the 1990s. Globe, which is located in southern Gila County, is the second largest city and county seat with a 2000 Census population of 7,486. Decennial census data for Payson and Gila County are shown in Table II-1.

³According to Thornthwaite Climate Regions (Hecht, Melvin, N., and Richard W. Reeves, *The Arizona Atlas*, Office of Arid Lands Studies, University of Arizona, Tucson, 1981, pp. 64).

Figure II-1 Payson PM10 Nonattainment Area Map



Legend

- PM10 Monitor
- Roads
- Payson (Yavapai Apache) Reservation
- Payson City Limits
- PM10 Nonattainment Area

This map is for informational use only. It is not intended to be used as a legal document. Locations can be subject to change without notice. Contact the Yavapai County Health Department for more information.

Author: Charles L. Kelly
 Project: 2003-001-0001

Scale: June 2003
 Revision: 10/2003

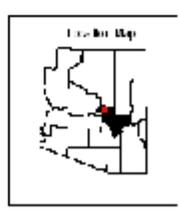


Table II-1 Decennial Census Population of Payson and Gilchrist County: 1970-2000

ounty: 1970-2000

Year	April 1 1970	April 1 1980	April 1 1990	April 1 2000
Payson	1,787	5,068	8,377	13,620 ⁴
Payson's decennial change		183.6%	65.3%	62.6%
Gila County	29,255	37,080	40,216	51,335
Gila County's decennial change		26.7%	8.5%	27.7%

SOURCE: U.S. Bureau of the Census, decennial census counts.

Table II-2 portrays the projected growth of Payson and Gila County in five-year increments from 2000 to 2015. According to Arizona Department of Economic Security's projections, Payson is expected to grow by slightly more than 40 percent between 2000 and 2015, while Gila county is expected to grow just over 18 percent during this time period.

Table II-2
Population Projections for Payson and Gila County: 2000-2015

Year	July 1 2000	July 1 2005	July 1 2010	July 1 2015
Payson	13,660	15,565	17,427	19,320
Gila County	48,614 ⁵	51,644	54,603	57,613

SOURCE: Arizona Department of Economic Security, August 1, 1997.

3. Economics

⁴The 2000 Census shows a population of 13,620 with 7,033 housing units of which 5,832 are occupied (17.1 percent vacant). The number of occupied housing units equals the number of households residing in Payson with 2.3 persons per household. Payson also has a group quarters population of 232. Persons not living in households are included in group quarters. Group quarters is classified into institutionalized persons (patients or inmates) and noninstitutionalized persons (rooming houses, group homes, dormitories, shelters, etc.).

⁵The 2000 Census count was approximately 2,700 higher than the projected population for 2000. The Arizona Department of Economic Security's population projections are expected to be revised in 2002.

Economic activity in Gila County can be described as divided between mining activities in the south and tourism in the north where Payson is located. Since Payson is a retirement community, retail trade and various service industries play an important role in the local economy. Because of the popularity of this area, permanent residents and tourists have increased demand for lodging, restaurants, and various businesses, including retail.⁶

Table II-3 shows a selected time series of civilian labor force data. Even though the labor force recently has been declining, the unemployment rate has fallen to a low of 2.8% in 2000.

**Table II-3
Civilian Labor Force Data for Payson**

Year	1990	1994	1996	1998	2000
Civilian Labor Force	3,033	3,490	3,592	3,586	3,357
Number Unemployed	110	148	151	129	93
Unemployment Rate	3.6%	4.2%	4.2%	3.6%	2.8%

SOURCE: Arizona Department of Economic Security. Data represent annual averages. Numbers for 2000 are preliminary.

B. Applicable CAA Requirements

Section 107(d)(3)(E) of the CAA, as amended, states that an area can be redesignated to attainment if the following conditions are met:

1. The NAAQS has been attained⁷;

⁶According to Arizona Department of Revenue, taxable sales in Payson have increased from \$93,413,750 in 1990 to \$221,735,950 in 1999, an increase of 137%.

⁷Attainment of the 24-hour standard is determined by calculating the expected number of days in a year with PM₁₀ concentrations greater than 150 Fg/m³. The 24-hour standard is attained when the expected number of days with levels above 150 Fg/m³ (average over a three year period) is less than or equal to one. Attainment of the annual PM₁₀ standard is achieved when the expected annual arithmetic mean PM₁₀ concentration over a three year period is equal to or less than 50 Fg/m³ [40 CFR 50.6 (a) and (b)].

2. The applicable implementation plan has been fully approved under Section 110(k);
3. The improvement in air quality is due to permanent and enforceable reductions in emissions;
4. The State has met all applicable requirements for the area under Section 110 and Part D; and
5. A maintenance plan with contingency measures has been fully approved under Section 175(A).

C. Applicable EPA Guidance

PM₁₀ SIP Development Guideline, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, EPA-450/2-86-001, Research Triangle Park, NC, June 1987.

Procedures for Processing Requests to Redesignate Areas to Attainment, John Calcagni, Director, Air Quality Management Division, U.S. Environmental Protection Agency, memorandum dated September 4, 1992.

PM₁₀ Emission Inventory Requirements, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, NC, September 1994.

Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard, John S. Seitz, Director, Office of Air Quality Planning and Standards (MD-10), May 15, 1995.

Limited Maintenance Plan Option for Moderate PM₁₀ Nonattainment Areas, Lydia Wegman, Director, AQSSD (MD-15), U.S. Environmental Protection Agency memorandum dated August 9, 2001.

D. Requirements for Nonattainment Areas that Have Attained the NAAQS

EPA's clean data policy applies to ozone nonattainment areas that are meeting the ozone NAAQS. Specifically, the policy allows certain requirements under CAA Section 172(c), including developing attainment demonstrations, and reasonable further progress (RFP) demonstrations, to be waived due to the fact that the areas which are

eligible under this policy have already attained the PM₁₀ NAAQS and have met RFP.⁸ Similarly, PM₁₀ nonattainment areas with simple PM₁₀ source problems, such as fugitive dust problems and residential wood combustion, that meet the following requirements are not required to develop an attainment demonstration and RFP. The requirements for the policy and how the Payson area meets the requirements are described below:

1. The area must be attaining the PM₁₀ NAAQS based on the three most recent years of quality assured monitored air quality data.

PM₁₀ concentrations reported at the Payson monitoring site between 1998 and 2000, showed no measured exceedance of the 24-hour PM₁₀ NAAQS. Thus, the three-year average was less than one exceedance per year, which indicates Payson attained the 24-hour PM₁₀ NAAQS. Review of the annual standard for calendar years 1998, 1999 and 2000 reveals that the 3-year annual average was 27 Fg/m³, thus the Payson area also attained the annual PM₁₀ NAAQS.

2. The State must continue to operate an appropriate PM₁₀ air quality monitoring network, in accordance with 40 CFR part 58, in order to verify the attainment status of the area.

The State intends to continue to operate the Payson monitoring network, in accordance with 40 CFR Part 58, in order to verify the attainment status of the area. The Payson monitoring network is described in Section III (A) of this plan.

3. The control measures for the area, which were responsible for bringing the area into attainment, must be approved by EPA as meeting reasonably available control measures (RACM) and reasonably available control technology (RACT) requirements.

The control measures for the area, which were responsible for bringing the area into attainment, are described in Section V of this plan. The State anticipates that EPA will approve these measures as meeting RACM and RACT requirements.

4. An emissions inventory must be completed for the area.

⁸ *Reasonable Further Progress, Attainment Demonstration, and Related Requirements for Ozone Nonattainment Areas Meeting the Ozone National Ambient Air Quality Standard*, John S. Seitz, Director, Air Quality Planning and Standards (MD-10), memorandum dated May 25, 1995.

An emissions inventory has been completed for the Payson area and a detailed description is contained in Section IV of this plan.

5. EPA must make a finding that the area attained the 24-hour and annual PM₁₀ NAAQS.

On February 15 2002, EPA determined that the Payson PM₁₀ nonattainment area has attained the 24-hour and annual PM₁₀ NAAQS by December 31, 2000 (67 FR 7082).

In addition to the above requirements, any requirements that are connected solely to designation or classification, such as new source review (NSR), and RACM/RACT, must remain in effect. However, certain requirements under CAA Section 172(c), including developing attainment demonstrations, and reasonable further progress (RFP) demonstrations, are waived due to the fact that the areas which are eligible under this approach have already attained the PM₁₀ NAAQS and have met RFP. Finally, general conformity requirements continue to apply. The use of the clean data policy does not constitute a CAA Section 107(d) redesignation, but only serves to approve nonattainment area SIPs required under Part D of the CAA.

E. Limited Maintenance Plan Option

The LMP option applies to certain moderate PM₁₀ nonattainment areas seeking redesignation to attainment. If the area meets certain criteria, the State may submit a maintenance plan at the time it is requesting redesignation that is more streamlined than would ordinarily be permitted. To qualify for the LMP option an area should meet the following applicability criteria. The Payson area qualifies for the LMP option in the following manner:

1. The area should be attaining the NAAQS.⁹

As described previously, PM₁₀ concentrations reported at the Payson monitoring site between 1998 and 2000, showed no measured exceedance of the 24-hour PM₁₀ NAAQS. Thus, the three-year average was less than one exceedance per year, which indicates Payson attained the 24-hour PM₁₀ NAAQS. Review of the annual standard for calendar years 1998, 1999 and 2000 reveals that the 3-year annual average was 27 Fg/m³, thus the Payson area also attained the annual PM₁₀ NAAQS

⁹Refer to footnote # 7.

2. The average PM₁₀ design value for the area, based upon the most recent 5 years of air quality data at all monitors in the area, should be at or below 40 Fg/m³ for the annual and 98 Fg/m³ for the 24 hour PM₁₀ NAAQS with no violations at any monitor in the nonattainment area.¹⁰

Based on the most recent 5 years of air quality data, 1996-2000, the 24-hour average design value for the Payson area is 88 Fg/m³ and the annual average PM₁₀ design value is 26 Fg/m³. Both the 24-hour average and annual average PM₁₀ design values within EPA's LMP allowable limits of 98 Fg/m³ for the 24-hour and 40 Fg/m³ for the annual PM₁₀ NAAQS.

3. The area should expect only limited growth in on-road motor vehicle PM₁₀ emissions (including fugitive dust) and should have passed a motor vehicle regional emissions analysis test.¹¹

The motor vehicle regional analysis for the Payson area was performed using the methods described in Attachment B of the LMP Option for Moderate PM₁₀ Nonattainment Areas memorandum. The following equation was used:

$$DV + (VMT_{pi} (DV_{mv}) \leq MOS$$

where:

- DV = the area's design value based on the most recent 5 years of quality assured data in ug/m³
- VMT_{pi} = the projected percentage increase in VMT over the next ten years
- DV_{mv} = motor vehicle design value based on on-road mobile portion of the attainment year inventory in ug/m³
- MOS = margin of safety for the relevant PM₁₀ standard for a given area: 40 ug/m³ for the annual standard or 98 ug/m³ for the 24-hour standard

Applying the test for the 24-hour average PM₁₀ standard yields the following result:

$$DV = 88 \text{ ug/m}^3 \text{ (24-hour average)}$$

¹⁰The design value is the mathematically derived pollutant concentration at a given site that is used to determine the level of control needed to reduce pollutant concentrations enough to attain the NAAQS.

¹¹The regional emission analysis test is used to determine whether increased emissions from on-road mobile sources could, in the next 10 years, increase concentrations in the area and threaten the assumption of maintenance that underlies the LMP policy.

$VMT_{pi} = 27.5$ percent (in proportion to expected population increase in Table II-2)
 $DV_{mv} = 28$ $\mu\text{g}/\text{m}^3$ (estimated using the PM_{10} emissions in Table IV-1)
 $MOS = 98$ $\mu\text{g}/\text{m}^3$ for 24-hour average PM_{10} standard

$$88 + (0.275 (28)) = 95.7 \mu\text{g}/\text{m}^3$$

Because the number is less than 98, the area passes regional analysis criterion for the 24-hour average PM_{10} standard.

Applying the test for the annual average PM_{10} standard yields the following result:

$DV = 26$ $\mu\text{g}/\text{m}^3$
 $VMT_{pi} = 27.5$ percent
 $DV_{mv} = 8.3$ $\mu\text{g}/\text{m}^3$ (estimated using the PM_{10} emissions in Table IV-1)
 $MOS = 40$ $\mu\text{g}/\text{m}^3$ for the annual average PM_{10} standard

$$26 + (.275 (8.3)) = 28.3 \mu\text{g}/\text{m}^3$$

Because the number is less than 40, the area passes the regional analysis criterion for the annual average PM_{10} ambient standard.

III. AIR QUALITY

A. Monitoring Network and Quality Assurance Procedures

Ambient concentrations of both Total Suspended Particulates (TSP) and PM_{10} have been measured in Payson since 1974. Ambient concentrations of TSP were measured from 1974 to 1987. In July 1987, ADEQ began monitoring ambient concentrations of PM_{10} . Initially, the ambient particulate monitor was located in downtown Payson from 1974 to 1977. The particulate monitor was moved to the Tonto National Forest Ranger Station in 1977 and operated at that site until 1980. Recorded PM levels at the Tonto Ranger Station were much lower than the recorded levels at the Payson downtown site, probably because it was two miles north of downtown Payson and, thus, not subject to the same urban particulate sources and influences as the downtown site. As a result, in 1980, the Tonto Ranger Station monitor was relocated to the Gila County Sheriff's office at 108 West Main Street. The Sheriff's office was a single story, flat roofed building with sampler inlets installed 5 to 6 meters above ground level. In June 1991, a pitched roof was added to the Sheriff's office, thus, it was necessary to move the PM_{10} monitor to a

new location. In July 1991, the PM₁₀ monitor was relocated approximately 0.25 miles west to the roof of the single story US West building at 300 West Main Street. In January 1999, sampling at the US West building was concluded and the PM₁₀ monitor was relocated to 204 W. Aero Drive (the Payson water treatment plant), approximately one mile southeast of the US West site. It is the intent of ADEQ to operate the Payson PM₁₀ monitor for the long-term. The site is operated on a once every sixth-day sampling period. The location, method, and parameters measured are detailed below.

Site Address	Began Operating	Latitude	Longitude	Type of Device	Pollutants Measured	Classification	Scale	Objective
Payson, 204 W. Aero Drive	1999 ¹²	34E 14'	111E 20'	Partisol	PM ₁₀	State and Local Air Monitoring Station	neighborhood	general population exposure

B. Historical Air Quality Data for 24-hour and Annual Standards

Air quality monitors, located in the Payson PM₁₀ nonattainment area, recorded exceedances of the 24-hour PM₁₀ NAAQS on eleven days in 1989 and 1990 (Table III-1). Two exceedances of the annual PM₁₀ NAAQS were recorded in Payson in the years 1989 and 1990 (Table III-2). The majority of the PM₁₀ NAAQS exceedances in Payson occurred during the winter months. Examination of the data indicated that this is probably due to strong inversions that are typical during winter and the increased use of fireplaces and woodstoves for residential heating. During the spring and summer, and to a lesser extent during the fall, the atmosphere in the Payson area is less stable than during the winter. The atmospheric instability is accompanied by increased turbulence which leads to greater dispersion of PM₁₀ during the spring, summer, and fall.

On December 21, 1993 (58 FR 67334), EPA designated the central portion of Gila County that includes the community of Payson as a moderate PM₁₀ nonattainment area, effective January 20, 1994. As a result of this action, the State was required to submit to EPA a PM₁₀ State Implementation Plan (SIP) which included an attainment demonstration for the area.

¹²In February 1999, the Payson PM₁₀ monitoring site was moved approximately one mile southeast to 204 W. Aero Drive. The previous monitoring site location was 300 West Main Street.

In June 1995, ADEQ submitted to EPA the PM₁₀ SIP for the Payson PM₁₀ nonattainment area. The SIP contained air quality modeling for the design year 1990 and projected attainment in the year 2001 based on the reductions in certain PM₁₀ sources (such as emissions for unpaved roads and parking lots). December 7, 1990, which experienced a 24-hour PM₁₀ NAAQS exceedance of 182 Fg/m³, was selected as the design day for the 1995 Payson PM₁₀ SIP. This day was selected over other days which recorded PM₁₀ exceedances in Payson because more PM₁₀ chemical analyses and weather data were available for that day from the Payson Intensive PM₁₀ Monitoring Study.¹³ An analysis of the micro-meteorological conditions of Payson on the design day, indicated a diurnal wind pattern of northeast winds from 7 p.m. to 9 a.m. and then southwest wind from 10 a.m. to 6 p.m. With a high pressure cell influencing the region, winds were calm to light which are often precursors to subsidence type inversions. The daytime maximum temperature was 63 degrees F. With an overnight low of 18 degrees F. The last measurable precipitation before December 7, 1990 was November 28th with an accumulation of 0.38 inches.

The 1990 base year emissions inventory comprised mainly of PM₁₀ emissions from paved and unpaved roads, wood smoke, and industrial sources. The attainment demonstration was based upon the impact of implemented RACM that reduced PM₁₀ emissions from the identified source categories, the closure of two industrial sources, and more stringent EPA standards for woodstoves. The demonstration also took into account the increases or decreases in PM₁₀ that would result from changing land use patterns and the growth in population and vehicle traffic between 1990 and 2001 in the Payson area.

Since 1991, the 24-hour and annual average PM₁₀ levels have been in compliance with the NAAQS. This is due in part to the implementation of measures to control fugitive PM₁₀ emissions generated from identified source categories, the closure of two industrial sources in 1993, and more stringent EPA standards for woodstoves (Section V).

C. Air Quality Data for 24-hour and Annual Standards

¹³The Payson Intensive PM₁₀ Monitoring Study, was conducted by ADEQ and measured particulate concentrations and particulate chemical constituents at three sites in the Payson area during the summer and winter of 1990. The purpose of the study was to collect sufficient ambient particulate data and associated weather data to perform an air quality modeling analysis of PM₁₀ levels in the Payson Nonattainment Area. PM₁₀ State Implementation Plan for the Payson Nonattainment Area, Arizona Department of Environmental Quality, June 1995, Appendix A, Technical Support Documentation of Data Review, pp. 9.

Table III-3 provides summary statistics from PM₁₀ ambient air quality measurements at the Payson monitoring site during 1996 through 2000. Figure III-1 and Figure III-2 show comparisons of PM₁₀ concentrations and the PM₁₀ NAAQS and LMP criteria. The PM₁₀ data for Payson has been collected and quality assurance procedures have been conducted in accordance with 40 CFR part 58.

PM₁₀ concentrations reported at the Payson monitoring site between 1998 and 2000, showed no measured exceedance of the 24-hour PM₁₀ NAAQS. Thus, the three-year average number of exceedances was less than one exceedance per year, which indicates the Payson area attained the 24-hour PM₁₀ NAAQS. Review of the annual standard for calendar years 1998, 1999 and 2000 indicates that the 3-year annual average was 27 ug/m³, thus the Payson area also attained the annual PM₁₀ NAAQS.

Based on the most recent 5 years of air quality data, 1996-2000, the 24-hour average design value for the Payson area is 88 Fg/m³ and the annual average PM₁₀ design value is 26 Fg/m³. Both the 24-hour average and annual average PM₁₀ design values within EPA's LMP allowable limits of 98 Fg/m³ for the 24-hour and 40 Fg/m³ for the annual PM₁₀ NAAQS.

D. Improvements in Air Quality Not Due to Temporary Economic Downturn or Unusually Favorable Meteorology

Section II contains Payson and Gila County population and economic data. The data shows high population growth in Payson between 1970 and 1990 (Table II-1). No economic downturn has occurred in the area over the past 10 years. During the ten year period, the area experienced the full range of meteorological conditions, both favorable and unfavorable, yet attainment was still achieved.

**Table III-1
24-Hour Exceedances of the PM₁₀ NAAQS in Payson 1989 - 1994**

Date	PM ₁₀ Concentration (Fg/m ³)
January 10, 1989	276
January 16, 1989	188
January 22, 1989	153
February 15, 1989	150
December 12, 1989	161
December 18, 1989	190
January 11, 1990	168
January 23, 1990	156
February 16, 1990	156
December 7, 1990	182
December 31, 1990	287

Note: 24-hour PM₁₀ NAAQS Standard = 150 Fg/m³

Source: PM₁₀ State Implementation Plan for the Payson Nonattainment Area, Arizona Department of Environmental Quality, June 1995, pp. 16.

**Table III-2
Annual Average PM₁₀ Concentrations in Payson For Years 1989-1994**

Year	PM ₁₀ Concentration (Fg/m ³)
1989	79
1990	67
1991	48
1992	40
1993	32

1994	30
------	----

Note: Annual PM₁₀ NAAQS Standard = 50 Fg/m³

Source: PM₁₀ State Implementation Plan for the Payson Nonattainment Area, Arizona Department of Environmental Quality, June 1995, pp. 16.

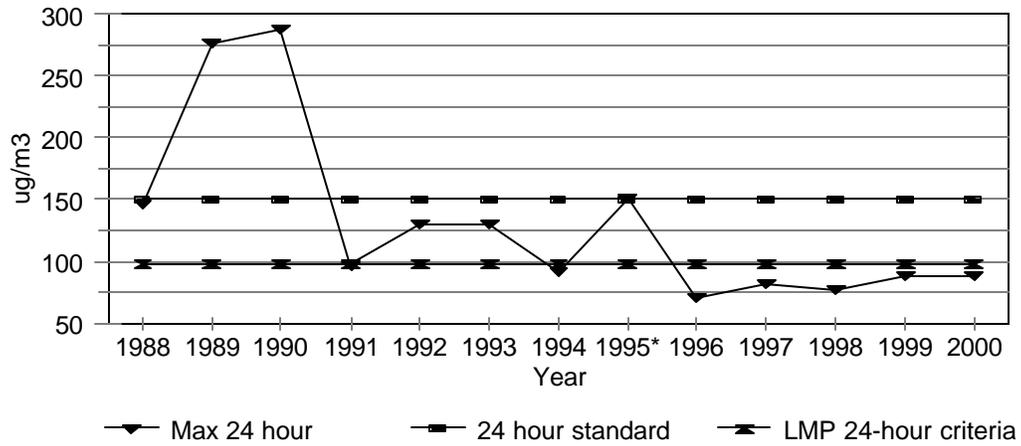
Table III-3
1996-2000 PM₁₀ Summary Statistics for Payson Nonattainment Area
PM₁₀ Concentrations are for Standard Conditions and are in ug/m³

Year	Quarter	# of Observations	Average Concentration	Max 24-hour Concentration	2 nd Highest Concentration	# of Exceedances
1996	1	14	43.6	70	65	0
	2	15	24.3	29	29	0
	3	16	15.1	25	20	0
	4	14	36.1	66	52	0
	Annual	59	29.8	70	66	0
1997	1	15	31.2	64	51	0
	2	15	16.9	28	25	0
	3	14	16.0	28	27	0
	4	15	34.1	81	67	0
	Annual	59	19.6	81	64	0
1998	1	15	33.7	77	63	0
	2	15	20.9	34	27	0
	3	15	16.6	28	26	0
	4	14	35.8	58	53	0
	Annual	59	26.8	77	63	0
1999	1	15 ¹⁴	50.3	88	47	0
	2	13	21.6	38	36	0
	3	14	11.8	22	20	0
	4	14	33.6	52	45	0
	Annual	56	29.3	88	63	0
2000	1	15	32.0	88	59	0
	2	14	18.6	41	31	0
	3	15	17.1	28	27	0
	4	14	30.4	54	54	0
	Annual	58	24.6	88	59	0

¹⁴ Four data points substituted under EPA's *Guideline on Exceptions to Data Requirements for Determining Attainment of Particulate Matter Standards*, EPA-450/4-87-005, April 1987.

Payson
PM₁₀
Nonattainment
Area

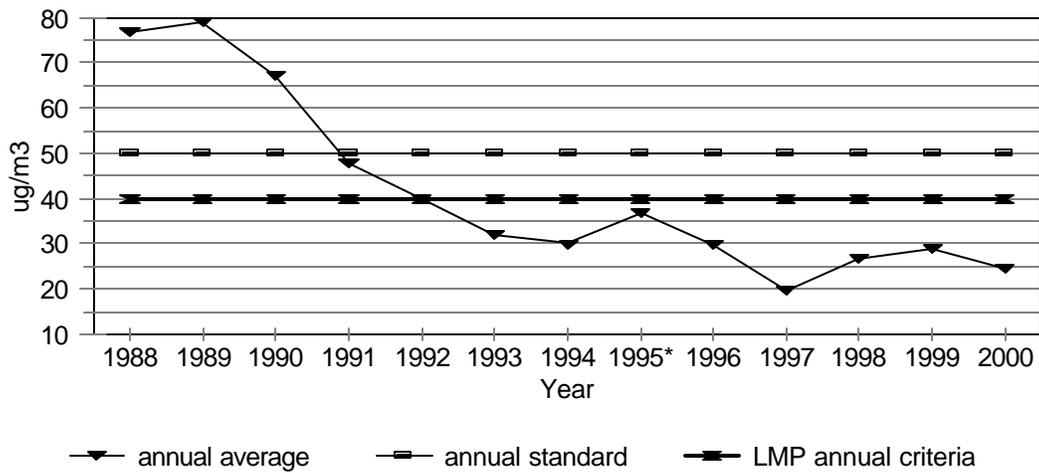
Figure III-1 Maximum 24-hour PM₁₀ Concentration



*Source: 1995 data - Arizona Department of Environmental Quality, 1995 air quality monitoring lab final data spreadsheet for Payson.

Figure III-2 Annual Average PM₁₀ Concentration
Payson PM₁₀ Nonattainment Area

*Source: 1995 data - Arizona Department of Environmental Quality, 1995 air quality monitoring lab final data spreadsheet for Payson.



IV. EMISSIONS INVENTORY

A. 1999 Base-Year Emissions

Table IV-1 and Figure IV-1 show the 1999 base-year emission estimates for the Payson area. Figure IV-2 shows a comparison between the 1999 emission estimates and the 1990 emissions inventory contained in the June 1995, PM₁₀ SIP for the Payson PM₁₀ nonattainment area. There is no reason to expect that emission levels in the Payson area have changed since 1999, so that year is an appropriate one to use in this analysis.

For the highway vehicle categories, PM₁₀ emissions are estimated using Payson area vehicle miles traveled (VMT) estimates multiplied by PM₁₀ emission factors for Arizona in EPA's 1999 National Emission Inventory (NEI). For other source categories, the April 1, 2000, population estimates were used to apportion emissions from the county to the nonattainment area level. Gila County emissions were obtained from the 1999 NEI Version 1.0 and were scaled to the Payson area, using the ratio of the Payson area population to the Gila County population in 1999.

For VMT related activities:

1999 Payson Area VMT = 48.9 million miles per year (0.13 million miles per day)

For population related activities:

1999/2000 Payson Area Population = 13,660

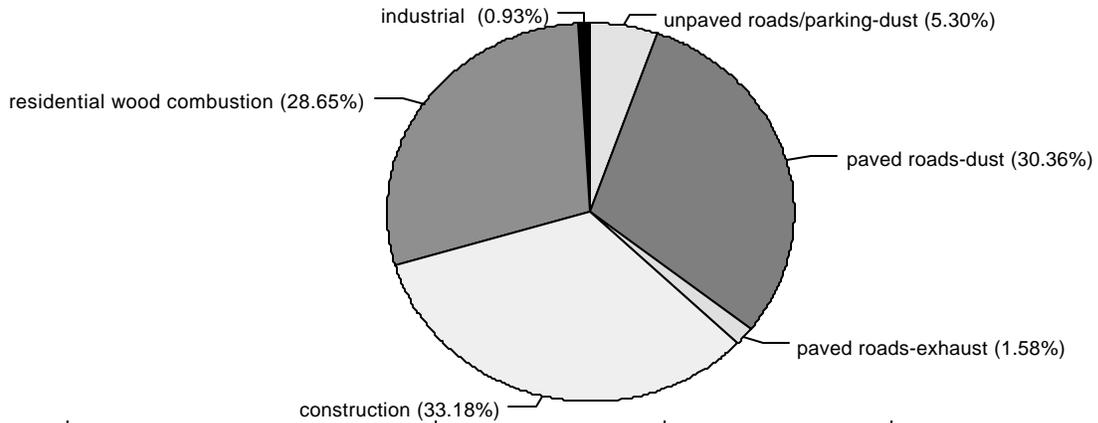
1999/2000 Gila County Population = 48,614

Therefore, a ratio of (13,660/48,614), or 0.281, was used to allocate Gila County emissions to the Payson area.

Table IV-1
Payson PM₁₀ Nonattainment Area - 1999 Emissions Estimates

Source Category	PM ₁₀ Emissions (tons per year)	PM ₁₀ Emissions (tons per day)	PM ₁₀ Emissions (percent)
Unpaved Roads/Parking Areas-Fugitive Dust	15.4	0.04	5.30%
Paved Roads-Fugitive Dust	88.3	0.24	30.36%

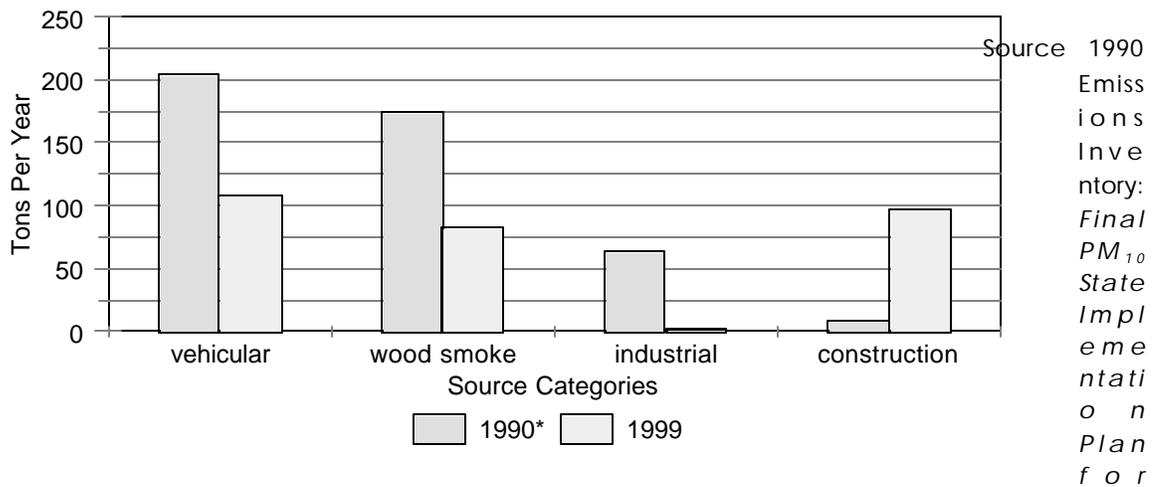
Paved Roads-Exhaust, Tire, and Brake Wear	4.6	0.01	1.58%
Construction	96.5	0.26	33.18%



Residential Wood Combustion	83.3	0.23	28.65%
Industrial Sources	2.7	0.01	0.93%
Total	290.8	0.80	100%

**Figure IV-1 Payson PM₁₀ Nonattainment Area
1999 Emissions Estimates**

**Figure IV-2 PM₁₀ Emissions Inventory
Payson PM₁₀ Nonattainment Area 1990 & 1999**



the Payson Nonattainment Area, June 1995. Appendix A: Technical Supporting Documentation for Payson, Arizona PM₁₀ State Implementation Plan, Arizona Department of Environmental Quality, June 19, 1995, pp. 54. Note: the 1990 "miscellaneous" emissions contained in the 1990 emissions inventory were primarily emissions from construction activities. In order to more accurately compare the 1990 and 1999 construction emissions, the 1990 "miscellaneous" emissions are included under the "construction" source category.

Unless otherwise noted, EPA-accepted emission factors in this section were derived using methodologies from the *Procedures Document for National Emission Inventory, Criteria Air Pollutants 1985-1999 (NEI Procedures)* (EPA, 2001). Descriptions of emission estimation methods by source category are provided below:

Unpaved Roads-fugitive dust: EPA's emission factor equation for PM₁₀ depends upon the surface material silt content, the mean weight of vehicles traveling on the unpaved roads, the surface material moisture content, and the number of days with measurable precipitation. Emissions are calculated by month at the State/road type level for the average vehicle fleet and then allocated to the county/road type level. The activity factor for calculating reentrained road dust emissions on unpaved roads is the VMT accumulated on these roads. Vehicle miles traveled on unpaved roads in the Payson Nonattainment Area are estimated by ADEQ to be 75,000 miles per year.

The calculated emission factor is representative of a fleet average emission factor rather than a vehicle-specific emission factor. A default value of 2.2 tons is used nationally as the mean vehicle weight for travel on publicly accessible unpaved roads (AP-42 section 13.2.2- pg. 4). A surface material moisture content value of one percent (1 percent) is representative of State-wide conditions.

Using this methodology, emission factors were calculated for each month in 1999. The worst-case emission factor of 212.0 grams per mile was calculated, based on precipitation during the month of December, 1999. December of 1999 had no days with precipitation greater than 0.01 inches. Precipitation data for unpaved roads are from a site in Winslow, Arizona. The daily Payson area emissions of 0.05 tons/day are based on the December emission factor. Annual emissions were calculated by summing the emissions for all twelve months. The average annual emission factor was 185.3 grams per mile.

Paved Roads-fugitive dust: The 1999 NEI estimates fugitive dust emissions for mobile sources on paved roads. EPA's PART5 model uses road surface silt loading, vehicle weight, and precipitation to estimate the PM₁₀ emission factor. Paved road silt loadings are assigned to each of the twelve functional roadway classifications (six urban and six rural) based on the average annual traffic volume of each functional system. A silt loading of 0.20 g /m² is assigned to road types that had an ADTV (average daily traffic volume) of less than 5,000 vehicles per day. ADTV is calculated by dividing annual VMT

by State and functional class (from Highway Statistics, Table VM-2 20) by 365 days per year, and then dividing by State-specific functional class roadway mileage (from Highway Statistics, Table HM-20 20). ADEQ estimates paved road VMT for the Payson area to be 48.9 million miles annually.

The PM_{10} emission factor equation for paved roads is representative of a fleet average emission factor rather than a vehicle-specific emission factor. A value of 3.2 tons is the mean vehicle weight for paved roads. The emission factors obtained from PART5 are modified to account for the number of days with a sufficient amount of precipitation to prevent road dust resuspension. The PART5 emission factors are multiplied by the fraction of days in a month with less than 0.01 inches of precipitation. Precipitation data for paved roads are measured at a site in Phoenix, Arizona.

Paved road PM_{10} emission factors were calculated for each month in 1999. The worst-case emission factor of 1.7 grams/mile was calculated based on a design day in the month of December. December of 1999 had no days with precipitation greater than 0.01 inches. Annual emissions were calculated by summing the emissions for all twelve months. The emission factor takes into account the portion of PM_{10} emissions caused by exhaust, brake wear, and tire wear; those emissions are subtracted from the total fugitive dust emissions for paved roads and are discussed below, under separate heading.

Paved Roads-exhaust, brake, and tire wear: EPA calculates monthly, county-level, Source Classification Code (SCC)-specific PM emissions from on-road vehicle exhaust components by multiplying year specific monthly, county-level, SCC-specific VMT by State-level, SCC-specific exhaust PM_{10} emission factors generated using PART5. Because none of the inputs affecting the calculation of the PM exhaust emission factors varies by month, EPA only calculates annual PM exhaust emission factors. The exhaust emission factor is 0.063 grams/mile.

The PART5 model PM_{10} emission factor for brake wear is 0.013 grams per mile for PM_{10} . This value is used to estimate brake wear emissions for all vehicle types.

The emission factors for tire wear generated by the PART5 model are proportional to the average number of wheels per vehicle. The emission factor is 0.002 grams per mile per wheel for PM_{10} . EPA calculates separate tire wear emission factors for each vehicle type. Estimates of the average number of wheels per vehicle by vehicle class were developed from the Truck Inventory and Use Survey; an average vehicle weight of 3.2

tons was used for this calculation. Tire wear PM emissions were then estimated by multiplying the VMT by the tire wear emission factor for the appropriate vehicle type.

Construction Activities: The 1999 NEI estimates Gila County construction emissions to be 343.4 tons/year. Payson area emissions were calculated by multiplying the County totals by the ratio of population in the area to the population in Gila County; that ratio is 0.281 (13,660:48,614).

The *NEI Procedures* document explains that PM₁₀ emissions for construction activities are calculated from an emission factor, an estimate of the acres of land under construction, and the average duration of construction activity. The acres of land under construction are estimated from the dollars spent on construction. The PM₁₀ emission factor is calculated from the total suspended particulates (TSP) emission factor for construction (equation 4.8-13) obtained from AP-42 and data on the PM₁₀/TSP ratio for various construction activities. The PM₁₀ emission factor for construction activities is 1.2 tons/acre/month of activity.

Residential Wood Combustion: The 1999 NEI calculates Gila County residential wood-burning emissions at 296.1 tons/year. Payson area emissions were calculated by multiplying the County totals by a ratio of population in the area to population in Gila County; that ratio is 0.281 (13,660:48,614). The design day emission factor was calculated using a daily fraction of the annual total, based on a day in December when wood burning is at its peak. Heating degree days for all twelve months were used to apportion monthly percentages of overall wood burning activity (a heating degree day is a unit, based upon temperature difference and time, used in estimating fuel consumption and specifying nominal heating load of a building in winter. For any one day, when the mean temperature is less than 65 degrees Fahrenheit, there exists as many degree days as there are Fahrenheit degrees difference in temperature between the mean temperature for the day and 65 degrees Fahrenheit). December 1999 had 389 heating degree days, out of an annual total of 1,679. Using the percentage of heating degree days in December (23.2 percent), a daily percentage of 0.75 percent of the annual total emissions was calculated (23.2 percent divided by 31 days).

The *NEI Procedures* document's method for estimating residential wood burning relies on activity factors such as wood use and wood weight, which were derived as follows: for wood use, the wood burned at the State level was apportioned to the county level using U.S. Census data on households that use wood as a primary fuel. The wood weight was based on empirical estimates of one cord of wood taking up 79 cubic

feet of space and the specific gravity of wood being approximately 0.639. Once the amount of burned wood was calculated, the emissions were based on EPA criteria pollutant emission factors (AP-42 methodology) for residential wood combustion, specifically 34.6 pounds (0.017 tons) of PM₁₀ per ton of wood burned in woodstoves and fireplaces.

Industrial Sources: Three industrial PM₁₀ sources were identified as operating in the Payson nonattainment area as of July 2001: Payson Concrete and Materials - (a) portable concrete batch plant and (b) portable hot mix asphalt plant and (c) Gila Concrete and Materials - portable concrete batch plant. Two industrial PM₁₀ sources, contained in the June 1995 Payson SIP and operating in the Payson area on the December 7, 1990, design day remain closed: (a) Kaibab Industries previously located at 113 West Main Street, closed and dismantled in June 1993 and (b) Lewis M. Pyle Memorial Hospital, 807 South Ponderosa, medical waste incinerator was shutdown in 1993. Table IV-2 below compares the industrial sources that were identified as operating in the Payson area on the December 7, 1990, design day and 2001 industrial sources:

**Table IV-2
Industrial Sources - Payson**

SIP Industrial Sources Moderate PM ₁₀ SIP June 1995		2001 Industrial Sources	Applicable State Regulations	Comments
Payson Concrete and Materials, 404 West Aero Drive	portable concrete batch plant	n/a	n/a	April 30, 1993 moved concrete batch plant to 1900 East Highway 260.

SIP Industrial Sources Moderate PM ₁₀ SIP June 1995		2001 Industrial Sources		Applicable State Regulations	Comments
Payson Concrete and Materials, 1900 East Highway 260	portable concrete batch plant & crushing and screening plant	Payson Concrete and Materials, 1900 East Highway 260, Payson, (Moved from 404 W. Aero Drive 4/30/93). Permit # 1001090	portable concrete batch plant	R18-2-324 ¹⁵ R18-2-723 ¹⁶	Facility is still operating in this location as of July 2001
		Payson Concrete and Materials, 1900 East Highway 260. Permit # 1000796.	portable hot mix asphalt	R18-2-324 R18-2-708 ¹⁷	
Gila Concrete and Materials, 201 West Phoenix Street, Payson, 85541.	portable concrete batch plant	Gila Recycling, Inc. - Concrete Division, operating as Gila Redi-Mix, Inc., 201 W. Phoenix St., Payson. Permit # 1000454.	portable concrete batch plant	R18-2-324 R18-2-723	Facility is still operating in original location as of July 2001
Kaibab Industries, 113 West Main Street (south Payson area)	lumber/sawmill operation	n/a	n/a	n/a	Original permit # 18007-95. Permit was terminated per letter dated 11/16/93. Operations halted and facility dismantled in June 1993 - location is retail as of July 2001

¹⁵ R18-2-324 Portable Sources was submitted to EPA on August 15, 1994, as part of a SIP revision package pertaining to the New Source Review and Prevention of Significant Deterioration Program; approval is pending.

¹⁶ R18-2-723 Standards of Performance for Existing Concrete Batch Plants was submitted to EPA July 15, 1998, as part of the *SIP Revision Pertaining to 1993 Rule-Making Comprised of Articles 6, 7, & 8*; approval is pending.

¹⁷ R18-2-708 Standards of Performance for Existing Asphalt Concrete Plants was submitted to EPA on July 15, 1998, as part of the *SIP Revision Pertaining to 1993 Rule-Making Comprised of Articles 6, 7, & 8*; approval is pending.

SIP Industrial Sources Moderate PM ₁₀ SIP June 1995		2001 Industrial Sources	Applicable State Regulations	Comments
Lewis M. Pyle Memorial Hospital, 807 South Ponderosa	medical waste incinerator	n/a	n/a	Hospital in operation. Incinerator shutdown in 1993. Incinerator removed and permit terminated 12/3/96.

Table IV-3 presents the current estimates of PM₁₀ and other criteria air pollutant emissions for Payson area industrial sources that are still operating.

**Table IV-3
Payson Area Industrial Source Emission Estimates**

Industrial Sources 1998 or 1999 Emissions Inventory						
SIP Industrial Sources	PM ₁₀ Source	Year	PM ₁₀	NO _x	VOC	SO ₂
Payson Concrete and Materials	portable concrete batch plant	1998	0.38			
	portable hot mix asphalt	1999	2.19	2.45	2.26	1.83
Gila Recycling, Inc. - Concrete Division operating as Gila Redi-Mix, Inc.	portable concrete batch plant	1999	0.14			

V. CONTROL MEASURES

A. Reasonably Available Control Measures (RACM)

The Clean Air Act requires that moderate PM₁₀ nonattainment area plans include provisions to ensure that RACM is implemented no later than 4 years after designation. The Act further requires that the plan provide for implementation of controls on PM₁₀ sources, within the same time period, reflecting reasonably available control technology (RACT). RACM and RACT are not required, however, for sources which do not contribute significantly to violations of the 24-hour or annual PM₁₀ NAAQS, or where additional controls on the sources would not expedite attainment of the NAAQS. The Clean Air Act Section 189(e) requires that the RACT provision apply to the gaseous precursors of PM₁₀ except where EPA determines that such sources do not contribute significantly to PM₁₀ levels which exceed the standard.

As discussed above, the exceedances recorded in the Payson area were the result of primary PM₁₀ emissions associated with paved and unpaved roads, wood smoke, and industrial sources. Attainment of the PM₁₀ NAAQS was the result of implemented RACM that reduced PM₁₀ emissions generated from the identified source categories, the closure of two industrial sources in 1993, and more stringent EPA standards for woodstoves. Since existing industrial sources contribute less than one percent to the total 1999 PM₁₀ emission estimates (Table IV-1), the RACT requirement does not apply to the Payson area either with respect to primary or secondary PM₁₀ emissions. PM₁₀ emissions from existing industrial sources are regulated under ADEQ's air permits program. Air quality permits are in place for existing industrial sources that ensure adequate control of PM₁₀ emissions and contain PM₁₀ controls such as production or discharge limits; maintenance and installation of air pollution controls, such as baghouses, water sprays, enclosures, shrouds, or scrubbers; and use of dust suppressants, soil stabilizers or wetting agents on haul roads, storage piles, and parking areas.

In response to the PM₁₀ exceedances and nonattainment designation, the following measures were implemented to control fugitive PM₁₀ emissions:

1. ADOT installed two miles of curbs and gutters on Highway 87 from the intersection of Highway 87 & 260 to Roundup Road in 1992.

2. ADOT installed five miles of paved shoulders on Highway 87 North and Highway 260 East when these stretches were widened to four lanes in 1992.
3. The Town of Payson paved four miles of unpaved roads in the Town of Payson since 1990.
4. Gila County paved nearly 18 miles of unpaved roads between 1989 and 2000. Specifically, 11.2 miles of Houston Mesa Road and Whispering Pines were paved between 1989 and 1992; 1.8 miles of Moonlight and Rainbow Roads were paved in 1994; 0.25 miles of Valley Road was paved in 1994; 2.6 miles of Round Valley Road was paved in 1996; 0.4 miles of East Verde Park was paved in 1999; and 1.25 miles of Mountain View Road was paved in 2000.
5. Arizona Administrative Code R18-2-607 that requires control of storage piles to minimize fugitive emissions (Appendix 2).¹⁸
6. In 1988, EPA implemented New Source Performance Standards for woodstoves.

The effective implementation of ordinances by the Town of Payson ensures that the benefits of EPA's New Source Performance Standards for woodstoves would be achieved in the area.

In addition to these RACM controls, the following strategies were also carried out in the Payson area: The Town of Payson implemented an ordinance requiring the paving of commercial parking facilities, and requiring paving of unpaved roads as condition of minor land divisions. In addition, Kaibab Industries' lumber/sawmill operation closed and the facility was dismantled in June 1993 and Lewis M. Pyle Memorial Hospital's medical waste incinerator was shutdown and removed in 1993. Smoke management plan requirements were implemented by the Forest Service, Bureau of Land Management, and Arizona Department of State Lands, in cooperation with ADEQ. These supplemental strategies contributed still further fugitive dust emission reductions and public health

¹⁸*R18-2-607 Storage Piles* was submitted to EPA on January 4, 1979, and subsequently approved by EPA on April 23, 1982 (47 FR 17485).

protection. Continued implementation of the measures will help ensure that the Payson area maintains the 24-hour and annual PM₁₀ NAAQS.

B. Permanent and Enforceable Control Measures

The CAA requires that each maintenance plan demonstrate that those measures that were credited with bringing the area into attainment be federally enforceable and be continued in the future. Measures 1-4 above meet this requirement because they are fully constructed and are permanent by their very nature. Measure 5 has previously been approved by EPA and remains a federally enforceable component of the SIP. Therefore, the Payson plan meets the CAA requirement for permanent and enforceable control measures.

C. Contingency Measures

Section 175A of the Act requires that a maintenance plan include contingency provisions, as necessary to promptly correct any violation of the NAAQS which may occur after redesignation of the area to attainment. EPA's memo, Limited Maintenance Plan Option for Moderate PM₁₀ Nonattainment Areas (Lydia Wegman, August 9, 2001), states that the contingency measures do not have to be fully adopted at the time of redesignation, but should identify measures to be promptly adopted, if necessary. The State commits to seek an expeditious remedy for any violation of the PM₁₀ NAAQS which may occur after redesignation of the area to attainment. Specifically, the State commits to determine whether or not violations have been recorded within six months of the close of the calendar year, and to review and determine appropriate contingency measure(s) by the end of the same calendar year. The State commits to implement the selected contingency measure(s) within one year of determining that a violation has occurred.

Under the LMP, the State is required to recalculate the average design value for the area annually and determine if the criteria of 98 Fg/m³ for the 24-hour and 40 Fg/m³ for the annual PM₁₀ NAAQS for the LMP will still be met. If after performing the annual recalculation, the State determines that the area no longer qualifies for the LMP, the State commits to take action to attempt to reduce PM₁₀ concentrations enough to requalify for the LMP.

Table V-1 includes measures that will be considered for implementation in the event of a violation of either the 24-hour or annual PM₁₀ NAAQS or in the event the annual recalculation of the area's average design value exceeds the LMP average

design value criteria. The cause of the violation or exceedance of the LMP average design value will help determine the appropriate contingency measure(s) to be implemented.

**Table V-1
Payson Area Contingency Measures**

Contingency Measures	Implementing Entity
Revise Arizona Administrative Code R18-2-702 B opacity limits from 40% to 20%	ADEQ
If any PM ₁₀ industrial source operating within the maintenance area is found to be contributing to monitored readings above the limited maintenance plan allowable limits, ADEQ will review existing air quality permit(s) to identify additional PM ₁₀ control measures which may be needed. If the PM ₁₀ source does not have a permit, the permitting authority will determine if an air quality permit and PM ₁₀ controls are needed.	ADEQ
Review of the requirement for dust control measures for material storage piles to determine if additional action is needed (Arizona Administrative Code R-18-2-607).	ADEQ
If wood burning sources are found to be contributing to monitored readings above the limited maintenance plan allowable limits, ADEQ will review State regulations and programs to determine appropriate action.	ADEQ
Pave or stabilize public unpaved roads, vacant lots, or unpaved parking lots located in the PM ₁₀ maintenance area subject to limits of statutory authority.	Town of Payson and/or Gila County
Continuation of Smoke Management Plan - state and federal land managers conducting prescribed burning must register with ADEQ for proposed burning activities (Arizona Administrative Code R18-2-Article 15 - Forest & Range Management Burns).	U.S. Forest Service, U.S. Bureau of Land Management, Arizona State Land Department, ADEQ.

VI. DEMONSTRATION OF MAINTENANCE OF THE STANDARDS

A. Commitment to Calculate PM₁₀ Design Values Annually

The State commits to recalculate the area's PM₁₀ design values annually to keep track of the area's air quality levels. If the levels rise above the limits qualifying the area

for the LMP, the State will act to lower them. If the action fails, the state will be required to submit a full maintenance plan.

B. Discussion of Permitting Program to Ensure that New Sources Will Not Jeopardize Continued Maintenance

Arizona Administrative Code (AAC) R18-2-403 (Permits for Sources Located in Nonattainment Areas) applies to new major sources or major modifications to sources located in nonattainment areas. Following redesignation, AAC R18-2-406 (Permit Requirements for Sources Located in Attainment and Unclassifiable Areas) will apply for any major source or major modification to a source located within the maintenance area.

C. CAA Section 175(A) Maintenance Plans

ADEQ commits to submit a maintenance plan for the second ten year period (2011-2021) by 2009.

VII. OTHER REQUIREMENTS FOR MODERATE AREA AND MAINTENANCE PLANS

A. CAA Section 110(a)(2)

Section 110(a)(2)(A) of the CAA requires that States provide for enforceable emission limitations and other control measures, means, or techniques, as well as schedules for compliance. Section V includes a list of control measures that help the Payson area reach and maintain attainment of the NAAQS.

Section 110(a)(2)(B) of the CAA requires that States provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to monitor, compile, and analyze data on ambient air quality. Under ADEQ's air quality assessment program, ambient monitoring networks for air quality are established to sample pollution in a variety of representative settings, to assess the health and welfare impacts and to assist in determining air pollution sources. These networks cover both urban and rural areas of the State. The monitoring sites are combined into networks, operated by a number of government agencies and regulated companies. Each network is comprised of one or more monitoring sites, whose data are compared to the NAAQS, as well as being statistically analyzed in a variety of ways. The agency or

company operating a monitoring network also tracks data recovery, quality control, and quality assurance parameters for the instruments operated at their various sites. The agency or company often also measures meteorological variables at the monitoring site. Section III includes monitoring network information and data for the Payson area.

The collected data are summarized into the appropriate quarterly or annual averages. The samplers are certified as Federal Reference or Equivalent Methods. Regular checks of the stability, reproducibility, precision, and accuracy of the samplers and laboratory procedures are conducted by either the agency or company network operators. The protocol for PM₁₀ monitoring used by the State, local agencies, and companies was established by EPA in the following sections of the Code of Federal Regulations (CFR):

- ! 40 CFR Part 50, Appendix J, Reference Method for the Determination of Particulate Matter as PM₁₀ in the Atmosphere
- ! 40 CFR Part 50, Appendix K, Interpretation of the National Ambient Air Quality Standards for Particulate Matter
- ! 40 CFR Part 58, Appendix A, Quality Assurance Requirements for SLAMS
 - Section 2, Quality System Requirements
 - Section 3.3 and 3.4.1, Data Quality Assessment Requirements
 - Section 4.2, Annual Reports
 - Section 5.3, Precision of Manual Methods Excluding PM_{2.5}
 - Section 5.4, Accuracy of Manual Methods Excluding PM_{2.5}
 - 40 CFR Part 58, Appendix D, Section 2.8, Particulate Matter Design Criteria for SLAMS
 - 40 CFR Part 58, Appendix E, Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring, Section 8, Particulate Matter (PM₁₀ and PM_{2.5})

Section 110 (a)(2)(C), Section 110 (a)(2)(E), Section 110 (a)(2)(F), and Section 110 (a)(2)(L) of the CAA require States to have permitting, compliance, and source reporting authority, as well as adequate resources and funding. The following portions of Arizona Revised Statutes (ARS) indicate compliance with the CAA requirements: ARS § 49-402, § 49-404, and § 49-406 establish ADEQ's permitting and enforcement authority, as well as ADEQ's responsibility and authority for development of nonattainment and maintenance area plans. As authorized under ARS § 49-402, ADEQ retains adequate funding and employs adequate personnel to administer the air quality program. Appendix 3 includes organization charts for ADEQ's Air Quality Division.

Under ADEQ's air permits program, sources (e.g., businesses, utilities, government agencies, and universities) that emit significant amounts of regulated air pollutants are required to obtain a permit before constructing, modifying, replacing, or operating any equipment or process which may cause air pollution. Existing sources are also required to obtain a revision or modification to their permit before transferring ownership, relocating, or otherwise significantly changing the method of their operation. Additionally, ADEQ is responsible for assessing fees based on the actual emissions submitted in the emission inventory for major sources under ADEQ jurisdiction pursuant to Arizona Administrative Code (AAC) R18-2-326.

State regulations (AAC R18-2-327) require that any source subject to a permit must complete and submit to the director an annual emissions inventory questionnaire. A current air pollutant emissions inventory of both permitted and non permitted sources within the State is necessary to properly evaluate air quality program effectiveness. ADEQ is responsible for the preparation and submittal of an emissions inventory report to the EPA for major sources and emission points prescribed in 40 CFR 51.322 and for sources that require a permit under ARS 49-426 for criteria pollutants.

Under ADEQ's air quality compliance program, major sources are inspected annually, while minor sources are inspected every two to three years. However, minor sources may be the subject of various initiatives during the year. If a particular sector (e.g., dry cleaners, portable sources) has evidenced problems in the prior year (e.g., failure to submit move notices by portable sources), ADEQ's Air Compliance Section implements initiatives to address the problem (e.g., seminars and workshops for the regulated community explaining the general permit requirements; individual inspections of all portable sources within a geographical area, mailings, etc.). In addition, compliance initiatives are developed to address upcoming or future requirements (e.g., new general permits) and include such actions as training for inspectors; development of checklists and other inspection tools for inspectors; public education workshops; targeted inspections; mailings, etc. ADEQ's Air Compliance Section also has an internal performance measure to respond to all complaints as soon as possible, but no later than within five working days.

Section 110(a)(2)(G) of the CAA requires that States provide for authority to establish emergency powers and authority and contingency measures to prevent imminent endangerment. AAC R18-2-220 prescribes the procedures the Director of ADEQ shall implement in order to prevent the occurrence of ambient air pollution concentrations which would cause significant harm to the public health. As authorized

by ARS § 49-426.07, ADEQ may seek injunctive relief upon receipt of evidence that a source or combination of sources is presenting an imminent and substantial endangerment to public health or the environment.

B. CAA Section 172(c)

Section 172(c) of the CAA requires that nonattainment plan provisions comply with each of the following:

Section 172(c)(1) of the CAA requires that nonattainment plan provisions provide for the implementation of all reasonably available control measures (RACM) as expeditiously as practicable and attainment of the national primary ambient air quality standards. Section V includes a description of RACM implemented in the Payson area to control PM₁₀ emissions.

Section 172(c)(3) and Section 172(c)(4) of the CAA requires a current inventories of actual emissions from all sources of relevant pollutant or pollutants and projected emission inventories. The 1999 base-year emission estimates are contained in Section IV. By qualifying for the LMP option, the requirements for projecting emissions inventories is waived.

Section 172(c)(5) of the CAA require permits for the construction and operation of new or modified major stationary sources. All new sources and modifications to existing sources in Arizona are subject to State requirements for preconstruction review and permitting pursuant to AAC, Title 18, Chapter 2, Article 1, 3, 4, 5, 6, 7, and 9. All new major sources and modifications to existing major sources in Arizona are subject to the New Source Review (NSR) provisions of these rules, including Nonattainment Area Analysis (NAA) and Prevention of Significant Deterioration (PSD). The State NSR program was conditionally approved by EPA in 1982, and has been revised and is pending approval from EPA.

REFERENCES

- 1987 Census of Transportation: Truck Inventory and Use Survey - United States*, TC87-T-52, U.S. Department of Commerce, Bureau of the Census, August 1990.
- EPA, 1987: U.S. Environmental Protection Agency, *Guideline on Exceptions to Data Requirements for Determining Attainment of Particulate Matter Standards*, EPA-450/4-87-005, Office of Air Quality Planning and Standards, Research Triangle Park, NC, April 1987.
- EPA, 2001: U.S. Environmental Protection Agency, *Procedures Document for National Emission Inventory Criteria Air Pollutants, 1985-1999*, EPA-454/R-01-006, Office of Air Quality Planning and Standards, Research Triangle Park, NC, 2001.
- 1999 National Emissions Inventory data base, <ftp://ftp.epa.gov/pub/EmisInventory/net99//>
- U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 1999*, <http://www.fhwa.dot.gov/ohim/ohimstat.htm>
- EPA, 1995: U.S. Environmental Protection Agency, *Draft User's Guide to PART5: A Program for Calculating Particle Emissions from Motor Vehicles*, EPA-AA-AQAB-94-2, Ann Arbor, MI, February 1995.
- EPA, 1999: U.S. Environmental Protection Agency, Office of Air Quality Planning Standards, *Estimating Particulate Matter Emissions from Construction Operations*, prepared by Midwest Research Institute, Research Triangle Park, NC, September 1999.
- EPA, 2000a: U.S. Environmental Protection Agency, *National Air Pollutant Emission Trends, 1900-1998*, EPA-454-R-00-002, Office of Air Quality Planning and Standards, Research Triangle Park, NC, March 2000.
- EPA, 2000b: U.S. Environmental Protection Agency, *Draft NONROAD Model Release*, <http://www.epa.gov/oms/nonrdmdl.htm>, June 2000.

MRI, 1988: Midwest Research Institute, *Control of Open Fugitive Dust Sources*, Kansas City, MO, prepared for U.S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

APPENDIX 1

Applicable EPA Guidance Documents

Procedures for Processing Requests to Redesignate Areas to Attainment, John Calcagni, Director, Air Quality Management Division, memorandum dated September 4, 1992.

Limited Maintenance Plan Option for Moderate PM₁₀ Nonattainment Areas, Lydia Wegman, Director, AQSSD (MD-15), memorandum dated August 9, 2001.

APPENDIX 2

Applicable Arizona Administrative Code

R18-2-324 Portable Sources

R18-2-607 Storage Piles

R18-2-723 Standards of Performance for Existing Concrete Batch Plants

R18-2-708 Standards of Performance for Existing Asphalt Concrete Plants

APPENDIX 3

**ADEQ Air Quality Division
Organization Chart**

APPENDIX 4

Public Hearing Documentation

Appendix 4.A.

Public Notice Proof of Publication

Appendix 4.B.

Public Hearing Agenda

Appendix 4.C.

Public Hearing Presiding Officer Certification

Appendix 4.D.

Public Hearing Transcripts

Appendix 4.E.

Responsiveness Summary



Jane Dee Hull
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

3033 North Central Avenue • Phoenix, Arizona 85012-2809
(602) 207-2300 • www.adeq.state.az.us



Jacqueline E. Schafer
Director

March 28, 2002

RESPONSIVENESS SUMMARY

to

Testimony Taken at Public Hearing and Written Comments Received on The Payson Moderate Area PM₁₀ Maintenance Plan and Request for Redesignation to Attainment

The public hearing on the Payson Moderate Area PM₁₀ Maintenance Plan and Request for Redesignation to Attainment, was held at 4:00 p.m., Tuesday, February 19, 2002, Payson Town Hall Council Chambers, 303 North Beeline Highway, Payson, Arizona. No oral comments were received during the hearing. The Arizona Department of Environmental Quality (ADEQ) received written comments from two individuals during the public comment period, which ended February 20, 2002. The public comments and ADEQ's responses are described below.

Comment #1:

One commenter suggested that paving the dirt portion of Easy Street between Zurich Drive and Malibu Drive and the dirt portion of Evergreen Street east of Easy Street would improve the air quality in Payson.

Response:

It is a general fact that paving unpaved roads does result in reduced particulate matter. However, several factors, including feasibility, economics, and legal issues, must be considered in such decisions. Municipalities are responsible for public road maintenance and road improvement activities within their statutory authority. According to Town of Payson staff, the road sections noted are utility easements located on private property and are not public roads. Municipalities are not permitted to expend public funds for improvements to private roads. These roads would be required to be improved, in accordance with the Town of Payson zoning requirements, as the property is developed by the owner. Questions and comments regarding road maintenance and road improvements in Payson should be directed to the Town of Payson, Public Works, 303 N. Beeline Highway, Payson, AZ 85541 or by calling (928) 757-0910 ext. 283.

Comment #2:

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733

March 28, 2002

Page 2

the One commenter stated that the prevailing winds are from the southwest and the only monitor referred to in the Plan is located on the west side of Highway 87 and therefore, air quality is being blown away from the monitor and is not being accurately measured. The commenter further stated that readings from the monitor location do not reflect factual pollution data for area and this gives a false impression of good air quality and to claim that air quality for the whole town is being monitored with one monitor located where the prevailing wind direction blows pollution away from the monitor is an insult to the public intelligence.

Response:

The current ADEQ PM₁₀ monitoring site in Payson is located at 204 E. Aero Drive and was placed there in accordance with EPA siting guidelines. The site is situated in the lower portion of a valley. Wind data collected at the monitoring site show that generally winds flow from the southwest during daylight hours and from the northeast during the nighttime hours. The area sometimes experiences wintertime temperature inversions which can trap pollutants in the valley and lead to higher pollutant levels. Because of these conditions, ADEQ considers the monitor to be the best overall site to gauge average to high PM₁₀ levels in the nonattainment area.

Comment #3:

One commenter stated there are approximately 8.5 miles of unpaved roads in Payson generating in some cases extremely severe fugitive dust in residential areas. The commenter also stated that ADEQ has a requirement that these roads be, at least, chemically stabilized to alleviate the problem. But the Town of Payson has declared the roads to be unadoptable orphans and with the blessings of ADEQ, has made it appear that they don't exist in the pollution picture.

Response:

Approximately 2 miles of unpaved public roads and 6.5 miles of unpaved private roads exist within the Town of Payson. Although annual application of chemical dust palliatives (magnesium chloride) to public unpaved roads was identified in the *1995 PM₁₀ State Implementation Plan for the Payson Nonattainment Area* as a measure to improve air quality, it was not identified as a committed measure, nor relied upon to reach attainment (See page 22 of this Plan for the attainment measures). Municipalities are responsible for public road maintenance and road improvement activities within their statutory authority, but may not expend public funds for improvements to private roads. The Town of Payson is considering future periodic application of a less expensive dust suppressant to public unpaved roads.

Comment #4:

One commenter stated that Payson has really done nothing to improve the air quality of the past 20 years except pass a wood stove ordinance. They do claim to have paved 4 miles of dirt roads in 10 years. They are being given credit for things that have nothing to do with the real problem. Their attention to the prevention of more dirt roads has nothing to do with the long existing problem.

Response:

The exceedances recorded in the Payson area during 1989 and 1990 were determined to be the result of PM₁₀ emissions associated with paved and unpaved roads, wood smoke, and industrial sources. Attainment of the PM₁₀ national ambient air quality standards was the result of a number of different controls implemented to reduce PM₁₀ emissions from these source categories. The controls were implemented by a number of different agencies including the Town of Payson, Gila County, Arizona Department of Environmental Quality, Arizona Department of Transportation, and the U.S. Environmental Protection Agency. Controls implemented are identified on page 22-23 of this Plan and include the following:

- Installation of curbs and gutters on Highway 87. This reduces the amount of PM₁₀ generated from vehicles driving on unpaved areas adjacent to the road and prevents erosion from stormwater from washing onto streets and then being resuspended into the air from passing vehicles.
- Paving shoulders on Highway 87 North and Highway 260 East. This reduces the amount of PM₁₀ generated from vehicles driving on unpaved areas adjacent to the road.
- Requiring control of storage piles to minimize fugitive emissions. This requires that reasonable precautions be taken to prevent excessive amounts of particulate matter from becoming airborne.
- Paving by the Town of Payson and Gila County of nearly 22 miles of unpaved roads within the nonattainment area.
- Closure of two industrial sources: Kaibab Industries' lumber/sawmill and Lewis M. Pyle Memorial Hospital's medical waste incinerator.
- Implementation of EPA's new source performance standard for woodstoves. Nationally, EPA has established PM₁₀ emission limits for new woodstoves and fireplace inserts. All woodstoves manufactured on or after July 1, 1990, or sold on or after July 1, 1992, must meet stringent Phase II emission limits.
- Implementation of ordinances prohibiting any installation of non-Phase II woodstoves or woodstove inserts within the Town of Payson; requiring a permit and inspection for installation; prohibiting the sale of used wood stoves (non-Phase II) for use within the Town of Payson; and prohibiting the use of woodstoves as the sole source of heat in residences.
- Implementation of ordinances requiring paving of commercial parking facilities and paving of roads as a condition of minor land divisions.
- Implementation of a smoke management plan which requires state and federal land managers conducting prescribed burning to register proposed burning activities with ADEQ.

Comment #5

One commenter stated that Phoenix is being forced to pave their dirt roads to improve air quality, but Payson's don't count.

Response

The Clean Air Act requires States to develop and submit to EPA a state implementation plan (SIP) providing for the attainment of the PM₁₀ NAAQS for every area designated nonattainment for PM₁₀. Nonattainment areas are classified based on the severity of the air quality problem. For example, the

Payson area is classified a “moderate” PM₁₀ nonattainment area while the Phoenix area is classified as a “serious” PM₁₀ nonattainment area. SIPs need to contain control measures designed to reduce PM₁₀ emissions from the specific source categories identified as contributing to PM₁₀ in the area. The type and level of control required for an area is determined by the different source categories identified for the area and by the area’s nonattainment classification (moderate, serious, severe). Moderate areas are required to implement reasonably available control measures (RACM). RACM are available control measures for significant sources that are reasonable, considering their technological and economic feasibility in the area to which the SIP applies. Serious areas are required to implement best available control measures (BACM) for significant sources. BACM is defined to be, among other things, the maximum degree of emission reduction achievable from a source or source category that is determine on a case by case basis considering energy, economic and environmental impacts. As part of the SIP for the Maricopa County PM₁₀ nonattainment area, the City of Phoenix did commit to pave unpaved roads; however, their commitment was limited to paving only unpaved public roads which totals approximately 80 miles. Because the Payson and Phoenix areas vary by many factors, including the severity of the air quality, the nonattainment classification, and the specific source categories identified as contributing to PM₁₀ in the area, the control strategies required for the area to reach attainment may be different.

Edits to Final Plan:

ADEQ determined that some minor formatting and grammatical revisions were appropriate to the final Plan. In addition, the following clarifications were made:

- Page 2, added “expected” to the following sentence to correct the definition of attainment: *Attainment of the annual PM₁₀ standard is achieved when the expected annual arithmetic mean PM₁₀ concentration over a three year period is equal to or less than 50 Fg/m³.*
- Page 2, revised the following sentence to address EPA’s February 15, 2002, determination that the Payson area did attain the 24-hour and annual PM₁₀ NAAQS: *As a result, on ~~July 25, 2001~~ February 15, 2002, EPA ~~proposed to determined~~ determined that the Payson PM₁₀ nonattainment area did attain the 24-hour and annual PM₁₀ NAAQS by December 31, 2000 (~~66 FR 38605~~) (67 FR 7082).*
- Page 3, added “(see Figure II-1)” to the following sentence: *The Payson nonattainment area is defined by the following townships (see Figure II-1):*
- Page 8, revised the following sentence to address EPA’s February 15, 2002, determination that the Payson area did attain the 24-hour and annual PM₁₀ NAAQS: *On ~~July 25, 2001~~ February 15, 2002, EPA ~~proposed to determined~~ determined that the Payson PM₁₀ nonattainment area has attained the 24-hour and annual PM₁₀ NAAQS by December 31, 2000 (~~66 FR 38605~~) (67 FR 7082).*

- Figure III-1, the maximum 24-hour PM_{10} concentration for Payson for 1995 was revised using the 1995 ADEQ air quality monitoring lab final data spreadsheet. An analysis of the 1995 annual report data and the monitoring lab data spreadsheet indicated that the annual report data and the monitoring lab final data spreadsheet differed. ADEQ felt that it was more accurate to use the monitoring lab report data.
- Figure III-2, the annual average PM_{10} concentration for Payson for 1995 was revised using the 1995 ADEQ air quality monitoring lab final data spreadsheet. An analysis of the 1995 annual report data and the monitoring lab data spreadsheet indicated that the annual report data and the monitoring lab final data spreadsheet differed. ADEQ felt that it was more accurate to use the monitoring lab report data.
- Figure IV-2, revised as follows: the 1990 “miscellaneous” emissions contained in the 1990 emissions inventory were primarily emissions from construction activities. In order to more accurately compare the 1990 and 1999 construction emissions, the 1990 “miscellaneous” emissions are included under the “construction” source category.
- Table V-1, replaced “design value” with “allowable limit” in the following sentence: *If any PM_{10} industrial source operating within the maintenance area is found to be contributing to monitored readings above the limited maintenance plan ~~design value~~ allowable limits, ADEQ will review existing air quality permit(s) to identify additional PM_{10} control measures which may be needed. If the PM_{10} source does not have a permit, the permitting authority will determine if an air quality permit and PM_{10} controls are needed.*
- Table V-1, replaced “design value” with “allowable limit” in the following sentence: *If wood burning sources are found to be contributing to monitored readings above the limited maintenance plan ~~design value~~ allowable limits, ADEQ will review State regulations and programs to determine appropriate action.*
- Page 20, revised footnote number 15, 16, and 17, to clarify the status of EPA’s approval of *Arizona Administrative Code (AAC) R18-2-324 Portable Sources, AAC R18-2-723 Standards of Performance for Existing Concrete Batch Plants, and AAC R18-2-708 Standards of Performance for Existing Asphalt Concrete Plants.*
- Page 22, added footnote number 18 to clarify the status of EPA’s approval of *AAC R18-2-607 Storage Piles.*
- Page 22, added the following sentence to clarify why reasonably available control technology (RACT) provisions are not required for existing industrial sources in the Payson area. *Since*

existing industrial sources contribute less than one percent to the total 1999 PM₁₀ emission estimates (Table IV-1), the RACT requirement does not apply to the Payson area either with respect to primary or secondary PM₁₀ emissions.

- Page 22, revised control measure number 1 to clarify that the Arizona Department of Transportation (ADOT), not the Town of Payson, had installed two miles of curbs and gutters on Highway 87 North from the intersection of Highway 87 & 260 to Roundup Road in 1992.
- Page 23, deleted “unpaved” from the following sentence to clarify the ordinance: The Town of Payson implemented an ordinance requiring the paving of ~~unpaved~~ commercial parking facilities...